

My Second Document

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1 Quadratic equations

The general quadratic equation

$$ax^2 + bx + c = 0 \tag{1}$$

has two solutions given by

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{2}$$

2 Numerical solution

In section 1, we gave the solution of the quadratic equation. This solution can be put in a computer program as is, but is then likely to suffer from round-off error problems.

The better way to do it is to find only one solution, call it x_1 , from the given formulae (2), selecting x_1 as *the solution for which the two term in the top of the ratio have the same sign*. Then compute the other solution from

$$x_2 = \frac{c}{ax_1} \tag{3}$$